

Tennis Injury Prevention (By Timothy R. Morgan, D.C.)

A two-part series on “Preventing Tennis Injuries” was previously published in the USA Tennis New England e-newsletter. For a more detailed discussion of acute/traumatic and chronic/overuse tennis injuries, visit www.NCCsportsmed.com.

FUNCTIONAL TRAINING FOR A STRONGER ATHLETE

Some sports injury prevention measures are simpler than others. Helmets minimize head injuries. Mouthguards can prevent concussions. Protective padding greatly lowers the risk of contusions, lacerations and fractures. Unfortunately for tennis players, however, even the use of head-to-toe body armor would be of no help in preventing those injuries most commonly experienced on the court.

Considering the demands of court play, tennis players are at risk of developing two distinctly different categories of injuries. Whereas the high speed starting and stopping nature of tennis subjects the player to acute/traumatic lower extremity injuries, repetitive motions, overhead play and the strain of frequent acceleration and deceleration heightens vulnerability to chronic/overuse type injuries.

REVIEW

Acute/traumatic injuries are those marked by an instantaneous onset of pain and disability, and include conditions such as muscular strains and ligament sprains or tears. Chronic/overuse injuries more typically evolve over time, with the athlete experiencing progressive pain and stiffness that may ultimately lead to physical limitations. More commonly seen in the adult player, chronic/overuse injuries represent more than two thirds of all tennis injuries and include ailments such as tennis elbow, rotator cuff syndrome, achilles tendinosis, degenerative arthritis, chronic joint sprains, and stress fractures. Left untreated, chronic injuries and their resultant physical impairments can increase an athlete’s likelihood of sustaining a more disabling acute/traumatic injury.

INJURY MANAGEMENT

Regardless of whether an injury is acute or chronic in nature, inadequate injury management can impede healing, prolong symptoms, and may result in additional complications and functional impairment.

Inadequate management could include playing through

pain, delayed or sub-optimal injury evaluation, mis-directed or ineffective therapeutic care, and the failure to take appropriate preventive and/or supportive measures.

Consultation with a sports physician experienced in the management of such injuries can provide for proper injury diagnosis, assuring timely and appropriate care. In many cases, this early intervention keeps the tennis player on the court. However, when injury severity necessitates a period of downtime, the goal of care is to facilitate a safe but speedy return to play.

Without question, timely and effective treatment of developing and/or existing injuries serves as the foundation for preventing additional future injury.

FUNCTIONAL TRAINING

Although it is difficult or impossible to predict exactly who will get injured and what type of injury one may sustain, perhaps the most informative and practical way to identify an individual’s predilection to injury is through a “functional evaluation.” This type of evaluation goes beyond traditional symptom-based assessments in that it considers the athlete’s genetic pre-disposition and structural vulnerability to injury, and attempts to identify tennis-specific weaknesses prior to the development of an injury.



For practical purposes, functional evaluations are most often carried out in a group or team setting and are co-administered by a sports physician and a strength and conditioning coach.

Communication between the sports physician, strength coach and the athlete’s tennis coach can then ensure that each individual player’s identified deficiencies are appropriately addressed through prescriptive therapeutic and/or conditioning-based exercises.

Coincident to this deficiency-based training, the strength coach can implement an overall training routine to prevent injury and serve as the foundation of the player’s tennis conditioning. An effective tennis injury prevention program is multi-faceted in design and is not achieved without considerable attention and effort. In order to be truly comprehensive, the design of this type of program must respect the intrinsic physical demands and risk factors of tennis, and

must be customized on an individual basis, as each athlete brings with them their own personal injury history, athletic strengths and weaknesses.



Therapeutic and conditioning exercises often begin with basic muscular coordination movements; progressing to full speed, tennis-specific strength and skill development.

With consideration to the player's seasonal tennis schedule, the strength coach can implement training cycles into the overall conditioning routine, a concept of training referred to as "periodization." By design, a periodized schedule times phases of peak conditioning to coincide with the athlete's competitive seasons and lessens the cumulative stress and strain of repetitive, non-varied training. In this way, both acute/traumatic and chronic/overuse injuries can be minimized, performance can be maximized, and athlete burnout prevented.



Athletic components such as agility, speed, reaction time, aerobic recovery, muscular strength and power production can be developed in a tennis-specific manner.

According to Michael Wood, who is certified as a strength and conditioning specialist by the National Strength and Conditioning Association, this concept of periodization is essential in training the competitive tennis player.

"It should be mandatory that all tennis coaches have their athletes involved in a yearlong periodized strength and conditioning program that will ensure their peaking for competition at the right time in addition to reducing the risk of injury."

As director of business at Velocity Sports Performance in Mansfield, Mass., Michael witnesses firsthand the multitude of benefits achieved through the sport-specific training of all types of athletes, including the tennis player.

"To receive added benefit in speed and agility development, it is important to train the body using the correct work:rest ratio that you would see in a match situation." He also notes that "the average point in a tennis match lasts only five to 10 seconds, typically followed by a rest period of 18 to 25 seconds."

Considering this type of physiological demand, the design of an effective tennis conditioning program should include a work:rest interval of approximately 1:2, and should implement short duration, multi-directional movement patterns, similar to that of match play.



Five to 10 second intervals of anaerobic speed and agility work, followed by a 10 to 25 second rest period simulates match play.

As with dedicated athletes in any sport, it can be difficult to convince the tennis player that time spent off-court can elevate their game. However, attention given to tennis-specific fitness development will improve many aspects of the athlete's game and can minimize on-court injuries.

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